

## Appendix D

Appendix D shows a comparison of the amino acid sequences of the bifunctional LKR-SDH proteins from Arabidopsis, corn and soybean, SEQ ID NOs: 112, 122 and 121, respectively. Amino acids conserved among at least two plant sequences are indicated with an asterisk (\*) on the top row; dashes are used by the program to maximize the alignment of the sequences. The LKR and SDH domains (boxed sequences) were identified by Epelbaum et al. (Plant Mol. Biol. 35:735-748 (1997)) and Tang et al. (Plant Cell 9:1305-1316 (1997))

SEQ ID NO:112	MNSNGHEEEKLGNVGVGILSETVNWERRTPLTSPHCARLLHGG-KDRTGISRIVVQPS
SEQ ID NO:122	-----CARLLGGGKNGPRVNRIVVQPS
SEQ ID NO:121	-----
SEQ ID NO:112	AKRIHHDALYEHVGCISDDLSDCGLILGIKQPELEMILPERAYAFFSHTHKAQKENMPL
SEQ ID NO:122	TRRIHHDALYEDAGCEISDLSCEGLIIGIKQPKLQMLSDRAYAFFSHTHKAQKENMPL
SEQ ID NO:121	-----
SEQ ID NO:112	LDKILSERVITCDYELIVGDHGRLLAFGKYAGRAGLVDFLHGLGQRYLSLGYSTPFLSL
SEQ ID NO:122	LDKILEERVSLFDYELIVGDDGKRSLAFGKFAGRAGLIDFLHGLGQRYLSLGYSTPFLSL
SEQ ID NO:121	-----
<b>LKR domain</b>	
SEQ ID NO:112	GASYMYSSLAAAKAAVIVSGEEIASQGLPLGICPIVVFVTGTGNVSLGAQEIIFKLLPHTF
SEQ ID NO:122	GQSHMYPSLAAAKAAVIVVAEEIATFGLPSGICPIVVFVTGNGVNSQGAQEIIFKLLPHTF
SEQ ID NO:121	-----
SEQ ID NO:112	VEPSKLPFLFVKDKGISQNGISTKRVIYQVGCIIITSQDMVEHDKPSKSFDAKYAHPEH
SEQ ID NO:122	YTPVFHERIAPYASVIVNVMYWEKRFPLLNMDQQLMPTGCPVGVCDITCDIGGSIE
SEQ ID NO:121	-----EPKDHVIVFDKADYYSHPH
SEQ ID NO:112	YNPVFHEKISPYTSVLVNCMYWEKRFPCLLSTKQLQDLTKKGLPLVGICDITCDIGGSIE
SEQ ID NO:122	YTPVFHERIAPYASVIVNVMYWEKRFPLLNMDQQLMPTGCPVGVCDITCDIGGSIE
SEQ ID NO:121	YNPTFHEKIAPIYASVIVNVMYWEKRFQPLPSYKQMDLMGRGSPVGIADITCDIGGSIE
SEQ ID NO:112	FVNRTATLIDSPFFRFPNSNNSYDDMDGDGVLCAVMDILPTEFAKESQHFGLDLSGFVG
SEQ ID NO:122	FINKSTSIERFFRYDPSKNSYHDDMEGAGVCLAVDILPTEFSKESQHFGLNLSRLVA
SEQ ID NO:121	FVNRGTSIDSFFRYDPLTNSYHDDMEGNGVICLAVDILPTEFAKESQHFGLNLSQFVVG
SEQ ID NO:112	SLASMTESIDLPAHLKRACISYRGELTSLYEYIPMRKSNPEAQDNIIANGVSSQRTFN

SEQ ID NO:122 SLASVQKPAELPSYLRACIAHAGRLTPLYEYIPMRNTMIDLAPAK--TNPLPDKK-YS  
 SEQ ID NO:121 NLSATDITKLPAHLRRACIAHKGVLTSLYDIIPMRSSDSEVSENA-ENSLSNKRRYN

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 SEQ ID NO:112 ILVSLSGHLFDKFLINEALDMIEAAGGSFHLAKELGQSADAEYSYSELEVGDADKRVLDQ  
 SEQ ID NO:122 TLVSLSGHLFDKFLINEALDIIETAGGSFHLVRCVEVGQSDMSYSELEVGDADTTLDR  
 SEQ ID NO:121 ISVSLSGHLFDQFLINEALDIIETAGGSFHLVNCVHVGQSIKAVSFSELEVGDADNRVLDQ

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 SEQ ID NO:112 IIDSRLTRIANPNEDYISPHREANKISLKGKVGQ--ENEIKEPMTKKSGVLILGAGRVC  
 SEQ ID NO:122 IIDSRLTRIANPNEDYISPHREANKISLKGKVGQ--ENEIKEPMTKKSGVLILGAGRVC  
 SEQ ID NO:121 IIDSRLTRIANPNEDYISPHREANKISLKGKVGQ--ENEIKEPMTKKSGVLILGAGRVC

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 SEQ ID NO:112 RPAADFLASVRTISSQWYKTYFGADSEKTDVHVIVASLYLKDAKETVGEISDVDEAVRL  
 SEQ ID NO:122 RPAADFLASVRTISSQWYKTYFGADSEKTDVHVIVASLYLKDAKETVGEISDVDEAVRL  
 SEQ ID NO:121 RPAADFLASVRTISSQWYKTYFGADSEKTDVHVIVASLYLKDAKETVGEISDVDEAVRL

# SDH domain

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 SEQ ID NO:112 DVSDSESLKLVQSVQDVVLSLLPASCHAVVAKTCIELKHLVTSYVVDDETSMLEHAKKS  
 SEQ ID NO:122 DVSDSESLKLVQSVQDVVLSLLPASCHAVVAKTCIELKHLVTSYVVDDETSMLEHAKKS  
 SEQ ID NO:121 DVSDSESLKLVQSVQDVVLSLLPASCHAVVAKTCIELKHLVTSYVVDDETSMLEHAKKS

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 SEQ ID NO:112 AGTITLGEMLDGPIDHMMAMKMINDAHKKGVKSTSYCGGLSPAAANNPLAYKFSW  
 SEQ ID NO:122 AGTITLGEMLDGPIDHMMAMKMINDAHKKGVKSTSYCGGLSPAAANNPLAYKFSW  
 SEQ ID NO:121 AGTITLGEMLDGPIDHMMAMKMINDAHKKGVKSTSYCGGLSPAAANNPLAYKFSW

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 SEQ ID NO:112 NPAGAIRAGQNPAYKYSNGDIHVDGKNLYDSAARFVRPNLPFALECFPNRDSLVYGEH  
 SEQ ID NO:122 NPAGAIRAGQNPAYKYSNGDIHVDGKNLYDSAARFVRPNLPFALECFPNRDSLVYGEH  
 SEQ ID NO:121 NPAGAIRAGQNPAYKYSNGDIHVDGKNLYDSAARFVRPNLPFALECFPNRDSLVYGEH

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 SEQ ID NO:112 YGISEASTTIFRGTLYRGEFSGMIMATLSKLGFFDSEANQVLSGKRIIFGALLSNILNKD  
 SEQ ID NO:122 YGISEASTTIFRGTLYRGEFSGMIMATLSKLGFFDSEANQVLSGKRIIFGALLSNILNKD  
 SEQ ID NO:121 YGISEASTTIFRGTLYRGEFSGMIMATLSKLGFFDSEANQVLSGKRIIFGALLSNILNKD

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 SEQ ID NO:112 ADNESEPLAG----EEEISKRIKLGHSKE--TAAKAAKTIVFLGFNEEREVPISLCKSV  
 SEQ ID NO:122 ADNESEPLAG----EEEISKRIKLGHSKE--TAAKAAKTIVFLGFNEEREVPISLCKSV  
 SEQ ID NO:121 ADNESEPLAG----EEEISKRIKLGHSKE--TAAKAAKTIVFLGFNEEREVPISLCKSV

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 SEQ ID NO:112 FDPATCYLMEEKLAYSGNEQDMVLLHHEVEVEFLESKRIKHTATLLEPGDIKNGQTTTAM  
 SEQ ID NO:122 FDPATCYLMEEKLAYSGNEQDMVLLHHEVEVEFLESKRIKHTATLLEPGDIKNGQTTTAM  
 SEQ ID NO:121 FDPATCYLMEEKLAYSGNEQDMVLLHHEVEVEFLESKRIKHTATLLEPGDIKNGQTTTAM

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 SEQ ID NO:112 AKTVGIPAAIGALVLIEDKIKTRGVLRPLEAEVYLPALDII-----Q-----  
 SEQ ID NO:122 AKTVGIPAAIGALVLIEDKIKTRGVLRPLEAEVYLPALDII-----Q-----  
 SEQ ID NO:121 AKTVGIPAAIGALVLIEDKIKTRGVLRPLEAEVYLPALDII-----Q-----

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SEQ ID NO:112	---AY-----	GIKLME---	KAE.-
SEQ ID NO:122	TQIKI-V.YSRAHVSFVLTPFWNI-YL.-TKM.QIKRTGGVYCKRRQRNLCIYDLSISNN		
SEQ ID NO:121	---AY-----	GIKLIE---	KT-E-

SEQ ID NO:112	---
SEQ ID NO:122	ADQ
SEQ ID NO:121	---